



U.S. Department of Energy
Office of River Protection

P.O. Box 450
Richland, Washington 99352

02-OSR-0147

Mr. Ron F. Naventi, Project Manager
Bechtel National, Inc.
3000 George Washington Way
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC-01RV14136 – INSPECTION REPORT IR-02-003 - QUALITY CONTROL, CONTROL OF SPECIAL PROCESSES, AND CONTROL OF MEASURING AND TEST EQUIPMENT ASSESSMENT

This letter forwards the results of the Office of Safety Regulation (OSR) inspection of the Bechtel National, Inc. (BNI) quality control, control of special processes, and control of measuring and test equipment processes, which was conducted from March 11-15, 2002. The inspectors identified one Finding, which is documented in the Notice of Finding (Enclosure 1).

This inspection was OSR's first programmatic review of BNI's quality control program. This review was limited, because the construction authorization at the time of the inspection contained very little important-to-safety activities. However, based on the program and activities review, with the exception of the Finding described below, the inspection concluded that BNI's QA program was in compliance with applicable requirements, staff were adequately qualified and trained, and QC work performed to date was in accordance with the QC program.

Details of the inspection, including the Finding, are documented in the enclosed inspection report (Enclosure 2). The Finding resulted from BNI's failure to follow the implementing procedure for submittal of records to Project Document Control as required by the Control of Measuring and Test Equipment procedure. The OSR had previously identified examples of this problem and collectively considers this a programmatic issue. Control and storage of records is one of the basis tenants of the BNI QA Manual. Additional management emphasis on records control is needed to preclude the loss of records, which could cost the project time and budget to recover or regenerate.

You are requested to provide a written response to the Finding within 30 days, in accordance with the instructions provided in the Notice of Finding. If you have any questions regarding this inspection, please contact me or Pat Carrier of my staff, (509) 376-3574.

Mr. Ron F. Naventi
02-OSR-0147

Nothing in this letter should be construed as changing the Contract, DE-AC27-01RV14136. If in my capacity as the Safety Regulation Official, I provide any direction that your company believes exceeds my authority or constitutes a change to the Contract; you will immediately notify the Contracting Officer and request clarification prior to complying with the direction.

Sincerely,

OSR:JEA

Robert C. Barr
Safety Regulation Official
Office of Safety Regulation

Enclosures

cc w/encls:
W. R. Spezialetti, BNI

NOTICE OF FINDING

Section C, Standard 7, "Environmental, Safety, Quality, and Health," of Contract DE-AC27-01RV14136, dated December 11, 2000, between Bechtel National, Inc. (the Contractor) and the U.S. Department of Energy (DOE), defines the Contractor's responsibilities under the Contract as they relate to conventional non-radiological worker safety and health; radiological, nuclear, and process safety; environmental protection; and quality assurance (QA).

Section C, Standard 7, Section (e)(3), "Quality Assurance" of the Contract states, "The Contractor shall develop a QA Program, supported by documentation that describes overall implementation of QA requirements." The Contractor's QA Program is defined in 24590-WTP-QAM-01-001, *Quality Assurance Manual*, Rev. 0, dated August 2001 (referred to as the *QA Manual*).

QA Manual, Policy Q-05.1, "Instruction, Procedures, and Drawings," requires (in Section 3.4, "Compliance with Implementing Documents") that "All individuals at the project shall comply with the implementing documents."

Contractor implementing procedure 24590-WTP-GPP-CON-7102_0A, "Control of Measuring and Test Equipment, dated December 18, 2002, Section 4.0, "Records," requires that "Documentation generated by this procedure shall be submitted to Project Document Control (PDC) for logging, issuance, distribution, and records retention to meet project records management requirements. This will include but not be limited to the following QA records: Original Calibration Certificates....."

Contrary to the above, during an inspection of the measuring and test equipment control process performed by the Office of Safety Regulation (OSR) at the Contractor's offices from March 11 through March 14, 2002, Original Calibration Certificates for torque wrench TW-001 (Certificate provided by Belhaven Applied Technologies, dated 11/30/01), test pressure gauge, TG-004 (Certificate provided by Belhaven Applied Technologies, dated 12/4/01), Holiday detector, HD-002 (Certificate provided by Tinker & Rasor, dated 10/31/01), test pressure gauge TG-003 (Certificate provided by Belhaven Applied Technologies, dated 12/4/01), dry film thickness gauge DFT-003 (Certificated provided by Southern California Edison Metrology Laboratory, dated 12/24/01), and peak reading voltmeter PRM-01, had not been submitted to PDC for logging, issuance, distribution, and records retention, and were in the Field Engineering offices.

This failure to follow procedure 24590-WTP-GPP-CON-7102_0A is an inspection Finding. (IR-02-003-01-FIN)

The OSR requires the Contractor to provide, within 30 days of the date of the cover letter that transmitted this Notice, a reply to this Finding. The reply should include (1) admission or denial of the alleged Finding, (2) the reason for the Finding, if admitted, and if denied, the reason why, (3) the corrective steps that have been taken and the results achieved, (4) the corrective steps that will be taken to avoid further Findings, and (5) the date when full compliance with the applicable commitments will be achieved. When good cause is shown, consideration will be given to extending the requested response time.

U.S. DEPARTMENT OF ENERGY
Office of River Protection
Office of Safety Regulation

INSPECTION: QUALITY CONTROL, CONTROL OF SPECIAL PROCESSES, AND
CONTROL OF MEASURING AND TEST EQUIPMENT

REPORT: IR-02-003

FACILITY: Bechtel National, Inc.

LOCATION: 3000 George Washington Way
Richland, Washington 99352

DATES: March 11-14, 2002

INSPECTORS: P. Carier, Lead Inspector
J. Adams, Senior Regulatory Technical Advisor (Assistant Lead)
W. Ang, OSR Consultant
D. Ryder, OSR Consultant
C. Taylor, OSR Consultant

APPROVED BY: P. Carier, Verification and Confirmation Official
Office of Safety Regulation

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EXECUTIVE SUMMARY

Quality Control, Control of Special Processes, and
Control of Measuring and Test Equipment
Inspection Report Number IR-02-003

INTRODUCTION

This inspection of Bechtel National, Inc. (BNI – the Contractor) Quality Control (QC), Control of Special Processes, and Control of Measuring and Test Equipment processes covered the following specific areas:

Qualifications, Certifications and Training for Inspection Personnel (1.2)
Functional Qualification Levels of Inspection and Test Personnel (1.3)
Education and Experience Qualification Requirements (1.4)
Inspection Requirements (1.5)
Inspection Planning (1.6)
In-Process Inspection and Monitoring (1.7)
Final Inspections (1.8)
Control of Nonconforming Items, Materials, and Services (1.9)
Documentation, Evaluation, and Disposition of Non-conformances (1.10)
Identification and Segregation of Nonconforming Items and Material (1.11)
Re-examination and Quality Trending (1.12)
Surveillances (1.13)
Control of Special Processes (1.14)
Control of Measuring and Test Equipment (1.15)

SIGNIFICANT OBSERVATIONS AND CONCLUSIONS

- The Contractor had written and approved implementing procedures for the training, qualification, and certification of the Contractor QC, field engineering (FE), and non-destructive examination (NDE) inspection and test personnel. The implementing procedures complied with the *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications," and Policy Q-10.1, "Inspection," requirements. (Section 1.2)
- The Contractor had implemented the *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications," and Policy Q-10.1, "Inspection," requirements for the functional level qualifications and certification of Contractor QC and NDE personnel. (Section 1.3)
- The Contractor had addressed and implemented the field engineers (FE) education and experience requirements of the Contractor's implementing procedure and *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications," and Policy Q-10.1, "Inspection." (Section 1.4)
- The Contractor's program for developing and documenting inspection requirements met the requirements of the *QA Manual*, Policy Q-10.1, "Inspection." Additionally, the

inspectors performed a limited review of the implementation of the inspection requirement process and found no discrepancies. (Section 1.5)

- The Contractor's QC inspection planning program and documentation met the planning requirements of Section 3.4.2 of the *QA Manual*, Policy Q-10.1, "Inspection." (Section 1.6)
- The Contractor's program for performing in process inspections and monitoring met the requirements stipulated in *QA Manual*, Policy Q-10.1, "Inspection," and the implementing procedures. The limited review of the in process inspection and monitoring program found no discrepancies. (Section 1.7)
- The Contractor's Construction Quality Control Program met the requirements of the *QA Manual*, Policy Q-10.1, "Inspection," for conducting final inspections of completed items, with one noted exception. The Contractor committed to modify the procedure and this commitment will be tracked as an Inspection Follow-up Item (IFI). (Section 1.8)
- The Contractor's procedures for the documentation, evaluation, notification, identification, segregation, and disposition of nonconforming items met *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items," requirements. (Section 1.9)
- The Contractor nonconformance documentation, evaluation, and disposition records complied with the requirements of the *Nonconformance Reporting and Control and Disposition of Nonconformance Reports* procedures and *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items," with the exception of the failure to prepare a Nonconformance Report (NCR) for an erroneous certified material test report. The inspectors brought this to the Contractor's attention and the Contractor took prompt actions to address the problem. The issue was of minor safety significance because additional tests confirmed the material to be acceptable. This was identified as a non-cited Finding. (Section 1.10)
- The Contractor identification and segregation of nonconforming Qualify Level 1 (QL1) items complied with the requirements of the Contractor's *Nonconformance Reporting and Control* procedure and *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items." Nonconforming items and material were identified and segregated, when practical. Controls were sufficient to preclude use of nonconforming items or material. (Section 1.11)
- The Contractor's implementing procedures for re-examination of repaired or reworked nonconforming items and quality trending of nonconforming items met the *QA Manual*, Policy 15.1, "Control of Nonconforming Items," requirements and were implemented for the small number of NCR's that had been initiated. (Section 1.12)
- The Contractor had written, approved and implemented a procedure for conducting QA and QC surveillances. The procedure met the requirements of *QA Manual*, Policy 18.2, "Quality Assurance Surveillance." (Section 1.13)

- The Contractor implemented the *QA Manual*, Policy Q-09.1, "Control of Special Processes," for the scope of work authorized by the Limited Construction Authorization Request (LCAR). (Section 1.14)
- The Contractor had incorporated the requirements of the *QA Manual*, Policy 12.1, "Control of Measuring and Test Equipment," in the Contractor's implementing procedure *Control of Measuring and Test Equipment*. Measuring and Test equipment were controlled in accordance with the procedure. However, the inspectors identified six Original Calibration Certificates that had not been submitted to the Project Document Control (PDC) as required by the *Control of Measuring and Test Equipment* procedure. This was identified as a Finding. (IR-02-003-02-FIN). (Section 1.15)

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QUALITY CONTROL, CONTROL OF SPECIAL PROCESSES, AND CONTROL OF MEASURING AND TEST EQUIPMENT

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QUALITY CONTROL, CONTROL OF SPECIAL PROCESSES, AND CONTROL OF MEASURING AND TEST EQUIPMENT INSPECTION REPORT IR-02-003

1.0 REPORT DETAILS

1.1 Introduction

The *Design, Construction, and Commissioning of the Hanford Tank Waste Treatment and Immobilization Plant (WTP) Contract*,¹ Section C "Statement of Work," Standard 7: "Environment, Safety, Quality, and Health," Section (e)(3), required Bechtel National, Inc (the Contractor) to develop and implement a Quality Assurance (QA) Program. The Contractor developed and submitted *Quality Assurance Manual*, 24590-WTP-QAM-QA-01-001, Rev. 0, (referred to as the *QA Manual* in this report) to the U.S. Department of Energy (DOE), Office of Safety Regulation (OSR). OSR reviewed, and approved for design and construction, the *QA Manual*, with comments, by means of DOE letter 01-OSR-0285.²

At the time of this inspection, the Contractor was approved to work under the Limited Construction Authorization (LCAR) agreement and was in the early stages of construction with the Quality Control (QC) organization implementing the *QA Manual* through their approved implementing procedure 24590-WTP-GPP-CON-7101A_0, *Construction Quality Control Program*. Construction activities consisted primarily of earthwork with limited important to safety work ongoing. Accordingly, QC was in the early stages of implementation of inspection and monitoring activities with limited important to safety work requiring their involvement. The inspectors focused on the Contractor's quality control, control of special processes, and control of measuring and test equipment programs to determine if implementing procedures properly included the commitments in the *QA Manual*, and to verify if Contractor personnel were following the implementing procedures

1.2 Qualifications, Certifications, and Training for Inspection Personnel (Inspection Technical Procedure (ITP) I-133)

1.2.1 Inspection Scope

The inspectors reviewed the Contractor's training program and the functional level qualification/certification procedures for QC, field engineers (FE), and nondestructive examination (NDE) inspection and test personnel to assess the implementation of related *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications" and Policy Q-10.1, "Inspection," requirements.

¹ Contract No. DE-AC27-01RV14136 between DOE and BNI, Inc., dated December 11, 2000.

² ORP letter from R. C. Barr to R. F. Naventi, BNI, "Office of Safety Regulation Approval of Bechtel National, Inc., Authorization Basis Change Notice (ABCN) 24590-WTP-ABCN-ESH-01-010, Revision A, Submittal of Quality Assurance Manual (QAM)," 01-OSR-0285, dated August 2, 2001.

1.2.2 Observations and Assessments

The *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications," Section 3.0, required the Contractor to utilize trained and qualified personnel. Policy Q-10.1, Section 3.0 specified the requirements for the qualification and certification of inspection and test personnel. The inspectors reviewed the Contractor's implementing procedure 24590-WTP-GPP-CON-7101, *Construction Quality Control Program*, to verify that the procedure complied with the *QA Manual* requirements. Sections 3.5.2 and 3.5.3 of the *Construction Quality Control Program* addressed the Contractor's requirement to train and qualify field engineers and certify QC inspection personnel, respectively; and referenced procedures 24590-WTP-GPP-CON-7106, *Quality Control Personnel Certification*, and 24590-WTP-GPP-CON-1301, *Construction Training*, for implementation of the respective requirements.

Section 3.5.3 of the *Construction Quality Control Program* required "QC personnel performing independent inspections to verify conformance of an item to specified criteria shall be certified by the FQCM [Field Quality Control Manager] as Level II or Level III per 24590-WTP-GPP-CON-7106, *Quality Control Personnel Certification*." The inspectors reviewed the Contractor's *Quality Control Personnel Certification* procedure and determined that the procedure complied with the requirements of *QA Manual*, Policy 10.1, Section 3.0 "Inspection."

Section 3.5.2 of *Construction Quality Control Program* stated, "Field Engineers performing construction verification and inspection activities will be qualified in the area of the work activity in accordance with 24590-WTP-GPP-CON-1301, *Construction Training*." The inspectors reviewed the *Construction Training* procedure and determined that the procedure provided the minimum requirements and guidance for the training needed to ensure construction personnel possessed the experience, knowledge, skills, and abilities that were necessary to perform their responsibilities. Section 3.1.1 of the *Construction Training* procedure stated, "Qualification of direct hire BNI and WGI non-manual personnel consists of evaluating skills, abilities, and statements of requirements such as resumes, interviews, reviews of education, previous experience, and work history. This process is performed in accordance with the procedure *Training* 24590-WTP-GPP-CTRG-002." The *Training* procedure provided a review process, which included Human Resource's (HR) verification of resume education and experience, the Training Manager (TM) review of training records to verify profile completion, and the field engineer's supervisor verification of the accuracy of specific construction procedure requirements into the training profile. Section 3.3 of the *Training* procedure stated that completion of this process documented qualification of the field engineer, and allowed the individual to be placed on the List of Qualified Individuals (LQI).

The *QA Manual*, Policy Q-10.1, "Inspection," Section 3.8.4, stated, "On-the-job training, with emphasis on hands-on experience gained through actual performance of inspection and test, shall be included in the training program." The inspectors determined that the *Construction Training* procedure, Appendix 1: Construction Training Matrix, specified the use of the Code OJT for declaring the need for On-the-job training (OJT) for an individual. The inspectors interviewed the Field Engineering Manager, who stated that FE's hired to date had sufficient experience and did not require OJT to be qualified.

The *QA Manual*, Policy Q-02.2, "Personnel Training and Qualification," Section 3.3, "Formal Qualification Requirements," required the Contractor to certify Nondestructive Examination (NDE) personnel and specified the certification requirements. The inspectors reviewed procedure 24590-WTP-GPP-CON-3701, *Development and Administration of Welding Program*. Section 3.1.2 of the *Development and Administration of Welding Program* procedure referenced procedure 24590-WTP-MN-CON-01-001, *Welding Control Manual* (WCM). The WCM contained the Contractor's corporate procedure NEPQ-2, *Bechtel Nondestructive Examination Standard Level I and II Personnel Qualification and Certification*. The Contractor's corporate procedure NEPQ-2, *Bechtel Nondestructive Examination Standard Level I and II Personnel Qualification and Certification* met the *QA Manual*, Policy Q-02.2, "Personnel Training and Qualification," requirements for the qualification, training, and certification of NDE personnel.

1.2.3 Conclusions

The inspectors concluded that the Contractor had written and approved implementing procedures for the training, qualification, and certification of Contractor QC, FE, and NDE inspection and test personnel. The implementing procedures complied with the *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications," and Policy Q-10.1, "Inspection," requirements.

1.3 Functional Qualification Levels of Inspection and Test Personnel (ITP I-133)

1.3.1 Inspection Scope

The inspectors reviewed the Contractor's procedure, and associated documents, for functional level qualifications of Contractor QC and NDE personnel. The inspectors interviewed Contractor management personnel. The inspectors assessed the adequacy and effectiveness of the implementation of the procedure and *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications," and Policy Q-10.1, "Inspection," requirements.

1.3.2 Observations and Assessments

Section 3.11 of the *Quality Control Personnel Certification* procedure, required a combination of basic project training (Core Training) and job specific training, (based on the supervisor's evaluation of education, experience and training requirements as listed in Section 3.3) for a Level II or III QC functional level qualification.

The inspectors interviewed the FQCM and the TM to assess the implementation of the QC certification process defined in the *Quality Control Personnel Certification* procedure. The FQCM indicated that the training and qualification requirements for QC personnel were established by an evaluation of their education and experience relative to their assigned duties. The FQCM defined the specific training required, in addition to Core Training, for each QC inspector. The FQCM reviewed the individual inspector's experience record to determine if On-the-Job (OJT) training was needed for the endorsement categories the individual was required to maintain. The FQCM and the Training Manager stated that training required by this evaluation

was documented on the employees training profile for the qualification and certification of Contractor QC personnel. The basic project requirements (Core Training) were controlled through the *Training* procedure and were listed on the individual's training profile as Core Training. Job specific training requirements were listed by job type under a QA sub-category, i.e., Construction-Lead Civil QC Inspector.

The inspector's reviewed a sample of QC personnel records, to assess implementation of the *Quality Control Personnel Certification* procedure. The records included annual physical examinations, experience evaluations, endorsement listings, education, and experience records. The records supported the certifications of qualifications signed by the FQCM for the individuals reviewed. The inspectors determined that the FQCM completed and documented the certification of the sampled QC staff in accordance with the above procedure.

The inspectors reviewed the certification records of NDE personnel and interviewed the Contractor's Level III certification official to assess implementation of the *Bechtel Nondestructive Examination Standard Level I and II Personnel Qualification and Certification* procedure. The certification records consisted of vision test records, examination results for each method certified, education and NDE training resumes, and NDE experience resume. The Contractor's Level III certification official reviewed and certified qualification of Level I and II NDE personnel in accordance with the Contractors *Welding Control Manual*, NEPQ-2, Paragraph 10.2. The inspectors also reviewed the certification records for the Level III certifying official to verify compliance with the *Welding Control Manual*. The inspectors interviewed the certifying official to discuss the certification process for the corporation and the performance of practical demonstrations. The inspectors determined that NDE personnel certification records, satisfied the requirements of the *Bechtel Nondestructive Examination Standard Level I and II Personnel Qualification and Certification* procedure. The inspectors also determined that the level NDE personnel were certified in accordance with the procedure by a properly certified Level III certifying official.

1.3.3 Conclusions

The inspectors concluded that the functional level qualifications and certifications for Contractor QC and NDE personnel were performed and documented in accordance with the *Bechtel Nondestructive Examination Standard Level I and II Personnel Qualification and Certification* procedure and complied with the *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications," and Policy Q-10.1, "Inspection," requirements.

1.4 Education and Experience Qualification Requirements (ITP I-133)

1.4.1 Inspection Scope

The inspectors reviewed the Contractor's procedure for FE education and experience requirements. The inspectors reviewed FE qualification records. The inspectors interviewed Contractor management personnel. The inspectors assessed the implementation of the *QA*

Manual, Policy Q-02.2, "Personnel Training and Qualifications," and Policy Q-10.1, "Inspection," FE training requirements.

1.4.2 Observations and Assessments

The inspectors reviewed a sampling (10 of 60) of the Contractor's field engineering (FE) personnel qualification records. The qualification records included the FE selection records, education and experience review, the training matrix, and training profiles. The inspectors assessed the implementation of the training program and the documentation of qualification of the Contractor FE personnel for inspection and test.

As discussed in Section 1.2.2 of this report, the procedures *Construction Quality Control Program*, *Construction Training*, and *Training*, specified the FE education and experience requirements. Section 3.0 of the *Training* procedure defined specific requirements to qualify FEs to the LQI list. The project core training and the employee specific construction training were listed in the employee training profile, which was used to complete the qualification process.

The inspectors discussed the qualification process specified in Section 2.0 of the *Training* procedure with the FEM, the TM, and HR. The inspectors determined that the FE qualification process required by the above noted procedures was followed and documented. The inspector verified based on the review of the sampled 10 qualification packages that the sampled FE's were qualified in accordance with the above procedures and listed on the LQI list.

1.4.3 Conclusions

The inspectors concluded that the FE education and experience requirements of the *Construction Quality Control Program*, *Construction Training*, and *Training* procedures and *QA Manual*, Policy Q-02.2, "Personnel Training and Qualifications," and Policy Q-10.1, "Inspection," training requirements were complied with and the sampled FE's were qualified.

1.5 Inspection Requirements (ITP I-133)

1.5.1 Inspection Scope

The inspectors assessed the Contractor's programs and procedures that verify, through inspection, conformance of an item or activity to specified requirements and verified that the procedures complied with *QA Manual*, Policy Q-10.1, "Inspection," requirements. This assessment included verification of the following: (1) characteristics subject to inspection and inspection methods were properly specified, (2) inspections were performed by qualified persons and the persons performing the inspections were sufficiently independent from the work being inspected, (3) sampling procedures were based on valid statistical methods, (4) inspection requirements and acceptance criteria were based on approved pertinent design or technical

documents, and (5) hold points were used by the Contractor as necessary. Contractor QC and Engineer personnel were interviewed to ascertain their understanding of the items listed above.

1.5.2 Observations and Assessments

The inspectors interviewed the Field Engineering Manager and Field Quality Control Manager to gain an understanding of the process being used by the Contractor to plan, control, and document inspection and acceptance requirements. The inspectors determined the following during the interviews:

- Inspection and acceptance requirements were specified based on approved drawings and specifications.
- Using the above, Construction procedures were developed, which identified specific inspection requirements that would be documented including defining who would perform the inspections (QC or Field Engineering). Specific requirement became documented QC inspection points in the appropriate construction procedure by using a collaborative effort between Field Engineering, Field Procurement, Field Subcontractors, and QC.
- The Construction procedures were intended to be a single source document for which inspection and acceptance requirements would be documented and by whom.
- QC inspectors performed in-process and final inspections of items and activities that were classified Quality Level (QL) 1, 2, and 3.
- Field Engineers were responsible for ensuring the activities under their purview met all design specifications regardless of quality classification and documentation requirements described in the construction procedure.
- The managers understood their responsibilities and were knowledgeable of the requirements in the areas of planning, performing, and documenting inspection and acceptance requirements.

As evidence of how this strategy was being implemented the inspectors were provided with the following construction procedures and engineering specifications:

- 24590-WTP-GPP-CON-7101A_0, *Construction Quality Control Program*, dated October 01, 2001
- 24590-WTP-GPP-CON-3203_0, *Concrete Operations (Including Supply)*, dated January 3, 2002
- 24590-WTP-3PI-D000-T0001_0, *Engineering Specification for Concrete Work*, dated December 3, 2001

- 24590-WTP-GPP-CON-3202_0, *Excavation and Backfill*, dated February 27, 2002
- 24590-WTP-3PS-CE01-T0001_2, *Excavation and Backfill*, dated February 29, 2002

The above procedures and specifications were provided by the Contractor to demonstrate how inspections requirements were developed and incorporated into construction procedures. The inspectors reviewed the above documents and found the following: (1) characteristics subject to inspection and inspection methods were properly specified, (2) inspections were documented to have been performed by qualified persons and that the persons performing the inspections were sufficiently independent from the work being inspected, (3) inspection requirements and acceptance criteria were based on approved pertinent design or technical documents, and (4) hold point use by the Contractor was described in the quality control procedures.

Specifically, the inspectors found the construction quality control program procedures provided appropriate guidance for developing construction procedures and processes that identified minimum inspection requirements. Section 3.4, *Inspection Planning*, of this procedure provided a listing of the minimum types of inspection requirements that must be covered in the development of construction procedures. The inspectors found the two construction procedures, listed above, incorporated the requirements listed in Section 3.4.

Section 3.5, *Personnel Qualification*, of the construction quality control program procedure described the minimum qualifications required to perform quality control activities. The inspectors verified that Quality Control Engineers (QCE) and Field Engineers (FE) (who performed the majority of the inspection work) were sufficiently independent from the work being performed. The inspectors reviewed the BNI organization charts and the construction quality control program procedure. The organization charts demonstrated the QCEs and the FEs were sufficiently independent from those individuals performing the work. The FEs reported to the Field Engineering Manager who in turn reported to the Site Construction Manager. The FEs did not directly supervise individuals performing the work. Quality Control Engineers reported to the Field Quality Control Manager (FQCM) who in turn reported to the Quality Assurance Manager. The QA/QC personnel did not directly supervise individuals performing work. The construction quality control procedure also addressed independence by requiring QC to be the only organization that could perform in-process and final inspections of items and activities that were classified QL-1, QL-2 and QL-3. The construction quality control program also specified the Field Engineering organization as the organization that performed day-to-day monitoring and verification of construction activities regardless of quality classification.

The inspectors reviewed the specifications and associated construction procedures for excavation, backfill, and concrete operations (listed above) to determine if inspection requirements were based on the pertinent design and technical documents. The inspectors found that the inspection requirements described in the construction procedures were developed from approved design specifications, as required by the construction quality control program procedure.

The inspectors reviewed the construction quality control program procedure and interviewed the FQCM to gain an understanding of how hold points were used by the Quality Control

Organization. The FQCM informed the inspectors that hold points would typically not be used by the project. Instead of using hold points, the project would require inspection points to be documented in individual construction procedures. These inspection points could not be bypassed. As a result, there was no process for waiving hold points within the construction quality control program procedure. The inspectors were told that QC hold points would only be used for activities and inspection points that must be witnessed by outside agencies such as DOE Acceptance Inspectors. The inspectors reviewed the construction quality control program procedure and found the subject of hold points were described in the procedure and the description in the procedure was consistent with the process described by the FQCM.

The inspectors were provided limited evidence where sampling was used in developing inspection requirements. The inspectors reviewed procedure 24590-WTP-GPP-GCB-00100B_0, *Field Materials Management*, dated October 01, 2001. Appendix 1 of this procedure described Quality Control receiving inspection activities. Within Appendix 1, a table was provided to allow the Lead Receiving Quality Control Engineer to perform acceptance sampling in lieu of 100 percent receipt inspection. The sampling requirements were based on Military Standard 105D. The inspectors found the sampling procedure met the *QA Manual*, Policy Q-10.1, "Inspection," and was based on a valid statistical method.

1.5.3 Conclusions

The inspectors concluded that the Contractor's program for developing and documenting inspection requirements met the requirements of *QA Manual*, Policy Q-10.1, "Inspection." Additionally, the inspectors performed a limited review of the implementation of the inspection requirement process and found no discrepancies.

1.6 Inspection Planning (ITP I-133)

1.6.1 Inspection Scope

The inspectors assessed the Contractor's inspection planning and documentation. This included verification that the planning and documentation met the requirements of *QA Manual*, Policy Q-10.1, "Inspection," Section 3.4.2. Records were reviewed to ensure that inspection documentation met requirements.

1.6.2 Observations and Assessments

The inspectors reviewed the Contractor's construction quality control program procedure to determine if the *QA Manual*, Policy Q-10.1, "Inspection," requirements were being properly prescribed in the development of construction procedures. Minimum Inspection planning requirements were described in Section 3.4.2 of the *QA Manual*, Policy Q-10.1, "Inspection." The inspectors found that the Contractor's program covered the *QA Manual*, Policy Q-10.1, "Inspection," requirements. Additionally, the inspectors found the construction procedures for

backfill and excavation and concrete operation implemented the inspection planning requirements of the construction quality control program procedure. The inspectors reviewed in-process documentation for excavation and backfill activities and results of this review are provided in Section 1.7.2 of this report.

1.6.3 Conclusions

The inspectors concluded the Contractor's QC inspection planning program and documentation met the planning requirements of Section 3.4.2 of *QA Manual*, Policy Q-10.1, "Inspection."

1.7 In-Process Inspection and Monitoring (ITP I-133)

1.7.1 Inspection Scope

The inspectors assessed the Contractor's programs and procedures for conducting in-process inspection and monitoring and verified compliance with the requirements of *QA Manual*, Policy Q-10.1, "Inspection." This assessment included a review of the Contractor's approach for verifying quality requirements included a combination of inspection and process monitoring that was performed throughout the duration of the process needing monitoring. Records of on-going in-process inspection and monitoring were reviewed. Interviews with Contractor personnel performing the in-process inspection and monitoring were conducted to determine their understanding of the quality requirements.

1.7.2 Observations and Assessments

During the inspection period, the only important-to-safety (ITS) in process monitoring that was being performed involved soil testing and compaction of soil for the Low Activity Waste (LAW) Building foundation. The inspectors witnessed on-going soil testing activities in the elevator pit for the LAW Building. The inspectors found that subcontractor QC, Contractor QC, and the Contractor FE personnel were involved in monitoring the on going ITS soil testing activities. Based on interviews with these individuals, the inspectors concluded Contractor and subcontractor personnel were familiar with inspection requirements of procedure 24590-WTP-GPP-CON-3202B_0, *Excavation and Backfill*, and GN Northern (the material testing subcontractor) Quality Assurance Plan. The Contractor FE demonstrated his knowledge by showing the inspectors the on-going documentation that was taking place as required in the excavation and backfill procedure. The inspectors reviewed the documentation and found that it met the requirements of the procedure. The subcontractor personnel also demonstrated knowledge in their inspection responsibilities by showing the inspectors their on-going documentation. The documentation provided the following: (1) individual sample numbers, (2) date of the sample, (3) type of observation, (4) results of the test, (5) the inspector who performed the test, and (6) QC verification signatures. The inspectors verified the level of documentation being prepared by the subcontractor was consistent with the subcontractor's Quality Assurance Plan. The inspectors found no discrepancies in this area.

The inspectors also reviewed construction procedure *Construction Quality Control Program* to determine if the requirements of *QA Manual*, Policy Q-10.1, "Inspection," for in process inspections and monitoring, were properly incorporated and provided adequate guidance. The inspectors found the *QA Manual*, Policy Q-10.1, "Inspection," requirements were incorporated and provided guidance for performing in process inspections and monitoring. The inspectors found no discrepancies in their review of the procedure.

1.7.3 Conclusions

The inspectors concluded the Contractor's program for performing in process inspections and monitoring met the requirements stipulated in *QA Manual*, Policy Q-10.1, "Inspection," and the implementing procedures. The limited review of the in process inspection and monitoring program found no discrepancies.

1.8 Final Inspections (ITP I-133)

1.8.1 Inspection Scope

The inspectors assessed the Contractor's procedures and programs for conducting final inspections and verified compliance with the requirements of *QA Manual*, Policy Q-10.1, "Inspection." This assessment included a review of the Contractor's approach for verifying completed items were inspected for completeness, markings, calibration, adjustments, protection from damage, or other characteristics, as required, to verify the quality and conformance to specific requirements.

1.8.2 Observations and Assessments

During the inspection period, there were few on-going ITS construction activities and no completed items had gone through the final inspection process. No final inspection records of completed items were available for review to ensure they met the documentation requirements described in *QA Manual*, Policy Q-10.1, "Inspection," Section 3.6.6. However, the inspectors were able to review the procedure governing how final inspections would be conducted when the project needs inspection of completed items. The inspectors reviewed construction procedure *Construction Quality Control Program* to determine if the requirements of *QA Manual*, Policy Q-10.1, Section 3.6, *Final Inspections*, were properly incorporated and provided adequate guidance for performing final inspections. With one exception, the inspectors found that the procedure had incorporated the requirements of the *QA Manual*, Policy Q-10.1, "Inspection," and that guidance was provided for performing final inspections. The one exception involved *QA Manual*, Policy Q-10.1, "Inspection," requirement 3.6.3 that required, "The inspection status of an item shall be identified according to Policy Q-14.1, "Inspection, Test, and Operating Status." This requirement was not specifically addressed in the above procedure. This was discussed with the FQCM and he concurred that the requirement was not specifically addressed in the procedure. The FQCM committed to modify the procedure to specifically address the *QA*

Manual, Policy Q-10.1, "Inspection," requirement. The inspectors found this commitment acceptable. Completion of this commitment will be tracked as Inspector Follow-up Item (IFI) IR-02-003-01-IFI.

1.8.3 Conclusions

The inspectors concluded the Contractor's Construction Quality Control Program met the requirements of *QA Manual*, Policy Q-10.1, "Inspection," for conducting final inspections of completed items, with one noted exception. The Contractor committed to modify the procedure and this commitment will be tracked as an IFI.

1.9 Control of Nonconforming Items, Materials, and Services (ITP I-133)

1.9.1 Inspection Scope

The inspectors reviewed the Contractor's nonconformance reporting and control procedures to assess implementation of the requirements of *QA Manual* Policy Q-15.1, "Control of Nonconforming Items."

1.9.2 Observations and Assessments

QA Manual Policy Q-15.1, "Control of Nonconforming Items," provided the requirements for documentation, evaluation, notification, identification, segregation, and disposition of nonconforming items. The inspectors reviewed procedures 24590-WTP-GPP-CON-7104, *Nonconformance Reporting and Control*, and 24590-WTP-3DP-G04B-00061, *Disposition of Nonconformance Reports* to verify that the implementing procedures met the *QA Manual* Policy Q-15.1, "Control of Nonconforming Items," requirements.

The *Nonconformance Reporting and Control* procedure required the preparation of a Nonconformance Report (NCR) when "a nonconformance is identified, and/or a permanent plant item is determined to be suspect/counterfeit, regardless of Quality Level." A nonconformance was defined as "a deficiency in characteristic or process which renders the quality of an item unacceptable or indeterminate." The preparation of an NCR was also required when a Quality Level item had documentation deficiencies.

The *Nonconformance Reporting and Control* procedure required QC to tag, when practical, the nonconforming item, container, or package containing the item with a QC Hold Tag. Segregating the item by impounding it in a controlled QC Hold Area, when practical, was also required. The procedure also required the FQCM to review and validate all NCR's. The FEM was required to provide disposition for NCR's. Design Engineering disposition and approval was required for repair or use-as-is dispositions. The Contractor's *Disposition of Nonconformance Reports* procedure provided instructions for Design Engineering disposition of NCR's.

The *Nonconformance Reporting and Control* procedure required distribution of NCR's to the Quality Assurance Manager for review and determination of the need for corrective action and trending. The procedure also required QC inspection and review for closure of NCR's.

1.9.3 Conclusions

The inspectors concluded that the Contractors *Nonconformance Reporting and Control* and *Disposition of Nonconformance Reports* procedures met the *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items," requirements for documentation, evaluation, notification, identification, segregation, and disposition of nonconforming items, materials and services.

1.10 Documentation, Evaluation, and Disposition of Nonconformances (ITP I-133)

1.10.1 Inspection Scope

The inspectors reviewed nonconformance reports and visually inspected the nonconforming items to assess compliance with the requirements of Contractor procedures and *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items," for documentation, evaluation, and disposition of nonconforming items.

1.10.2 Observations and Assessments

The Contractor's *Nonconformance Reporting and Control* and *Disposition of Nonconformance Reports* procedures provided the requirements for the documentation, evaluation, and disposition of nonconforming items. The inspectors reviewed 16 NCR's to assess the categorization of the NCR's. The Contractor categorized 10 of the NCR's as "commercial" (non-quality) and six as Quality Level 1 (QL 1). The inspectors determined that the NCR's were categorized in accordance with the *Nonconformance Reporting and Control* procedure.

The inspectors reviewed QL 1 NCR's 24590-WTP-NCR-CON-02-002, -009, -010, -011, -012, and -014, and associated procedures and specifications. The inspectors assessed procedural compliance related to appropriate documentation, evaluation and disposition of the NCR's. The inspectors visually inspected the nonconforming items and discussed the nonconforming conditions with the Field Quality Control Manager and Field Engineering Manager to assess the accuracy of the nonconformance reports and the extent of review and evaluation performed. The inspectors determined the NCR's adequately described the nonconforming conditions and the characteristics that did not conform to specified criteria. The Field Quality Control Manager reviewed and validated the NCR's in accordance with procedures. The Field Engineering Manager, or designee, evaluated and approved the proposed disposition of the NCR's or were in the process of evaluating and approving the initial/recommended disposition in accordance with procedures.

The Contractor provided a "rework" disposition for 5 of 6 QL 1 NCR's. The Contractor was evaluating the sixth NCR and had not yet formulated a disposition. The inspectors determined that none of the NCR dispositions required changes to quality assurance records, as-built records, or specifying documents. For the four NCR's related to procurement of QL 1 reinforcing steel bars, additional certified material test reports were required as a result of the dispositions provided for the NCR's. The NCR regarding nonconforming backfill material required additional QC inspection records for the backfill material. The five NCR dispositions required the nonconforming items to be re-inspected to verify acceptability. Disposition of the five NCR's met the requirements of the Contractor's *Nonconformance Reporting and Control* and *Disposition of Nonconformance Reports* procedures.

The Contractor's *Nonconformance Reporting and Control* procedure required the distribution of NCR's to the QA Manager for review and determination of the need for corrective action. QA noted NCR's 24590-WTP-NCR-CON-02-009, -010, -011, and -014 identified nonconforming physical properties of reinforcing steel bars from a common supplier and manufacturer. QA questioned "adequate implementation of controls to prevent the identified deficiencies" and a need for subcontractor corrective action to preclude recurrence. QA issued Supplier Corrective Action Report (SCAR) 24590-WTP-SCAR-QA-02-003 to address this condition. The inspectors determined that QA's review of nonconformance reports for corrective actions met procedural and regulatory requirements.

QA performed a surveillance of the manufacturer's re-testing of reinforcing steel bar samples and corrective actions for the identified conditions. The manufacturer informed QA, during the surveillance, that a "Physical Properties Limit File Program" did not include the American Society for Testing and Materials (ASTM) Standard A 706-2001 tensile to yield ratio acceptance criteria and had subsequently been corrected. The program also erroneously used the elongation limit for #11 reinforcing steel bars for #3, 4, & 5 reinforcing steel bars. The Contractor Supplier QA Manager informed the inspectors that the certified material test reports and the signature of the manufacturer's metallurgist and QA Manager were computer generated based on the erroneous computer program.

The certified material test reports for the nonconforming reinforcing steel bars, identified in the NCR's discussed above, stated that the reinforcing steel bars conformed to ASTM A 706-2001 specifications despite the nonconforming test results. The erroneous statement rendered the certified material test reports to be of unacceptable quality, a nonconforming condition. The *Nonconformance Reporting and Control* procedure, paragraph 3.2.2.1, required the preparation of an NCR when a nonconformance was identified. The erroneous certified material test reports had not been identified as a nonconformance. No verification and validation of the corrected "Physical Properties Limit File Program" was required. The inspectors discussed with the Contractor the failure to prepare an NCR for erroneous certified material test reports, noted above. As a result, the Contractor modified its response to the supplier's SCAR 24590-WTP-SCAR-QA-02-003 response and required the supplier to describe how the program would be verified and validated. The condition was of minor safety significance because the reinforcing steel bars were determined to meet ASTM A 706-2001 requirements by tests of additional samples of the material. Based on the minor safety significance, and actions taken by the

Contractor to address this issue subsequent to the inspectors' identification, this issue is considered a non-cited Finding.

1.10.3 Conclusions

The inspectors concluded Contractor nonconformance documentation, evaluation, and disposition met the requirements of *Nonconformance Reporting and Control* and *Disposition of Nonconformance Reports* procedures and *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items." With one exception, nonconforming conditions were appropriately documented, evaluated, and dispositioned. The inspectors observed that an NCR had not been prepared for erroneous certified material test reports. The issue was of minor safety significance and the Contractor took prompt actions to address the problem. The issue was considered a non-cited Finding.

1.11 Identification and Segregation of Nonconforming Items and Material (ITP I-133)

1.11.1 Inspection Scope

The inspectors reviewed nonconformance reports and performed visual inspection of the nonconforming items to assess compliance with the requirements of the Contractor's *Nonconformance Reporting and Control* procedure and *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items," for identification and segregation of nonconforming items.

1.11.2 Observations and Assessments

The inspectors visually inspected the nonconforming items identified by NCR's 24590-WTP-NCR-CON-02-009, -010, -011, -012, and -014 to assess compliance with the *Nonconformance Reporting and Control* procedure for identification and segregation of the nonconforming items. The nonconforming reinforcing steel bars were stored in an isolated location of the Contractor's material "marshaling yard." No QC accepted material was stored in vicinity of the nonconforming material. The nonconforming reinforcing steel bar bundles were tagged with a legible, bright red QC Hold Tag, in accordance with the procedure. The inspectors determined that nonconforming reinforcing steel bars were identified and segregated in accordance with the procedure.

The inspectors visually inspected the nonconforming items identified by NCR's 24590-WTP-NCR-CON-02-002 to assess compliance with the *Nonconformance Reporting and Control* procedure. The Contractor considered the identification or segregation of the backfill material to be impractical. The Contractor controlled removal and replacement of the Pit 31 backfill, prior to additional fill of the area, by the work schedule and the NCR. The inspectors determined that the Contractor's controls were in accordance with the procedure.

1.11.3 Conclusions

The inspectors concluded Contractor identification and segregation of nonconforming QL1 items complied with the requirements of the *Nonconformance Reporting and Control* procedure and *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items." Nonconforming items and material were identified and segregated, when practical. Controls were sufficient to preclude use of nonconforming items or material.

1.12 Re-examination and Quality Trending (ITP I-133)

1.12.1 Inspection Scope

The inspectors reviewed the Contractor's implementing procedures for non-conformance reporting and control, interviewed QA and QC staff, and reviewed QA records, to verify implementation of the *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items," Section 3.9 and 3.10 requirements for re-examination of repaired or reworked items, and quality trending of nonconforming items.

1.12.2 Observations and Assessments

The inspectors reviewed the *Nonconformance Reporting and Control* procedure and verified the requirements for re-examination of repaired and reworked items were included in the procedure. The inspectors also reviewed Contractor's procedure 24590-WTP-GPP-QA-204A_0, *Quality Trending and Analysis*, dated January 14, 2002, and verified the requirement for the Contractor to periodically review nonconformance documentation to analyze and identify quality trends was included in the procedure.

The inspectors reviewed the Contractors NCR log and interviewed the Contractor's QA Programs Manager to verify implementation of a trending program for NCR's. The inspectors determined that at the end of the previous required quarterly trending period (i.e., December 31, 2001), only two NCR's had been written; hence, no trend could be developed. At the time of the inspection, 16 NCR's had been written. QA analyzed the NCR's for trends and will report the results of the analysis in the next required quarterly trending report. The inspectors determined that a NCR trending program had been initiated, but could not yet be fully implemented and verified due to the small population of NCR's.

As discussed in Section 1.10.1 and 1.11.1, above, six of the 16 NCR's generated, were dispositioned as "Rework" or "Repair." Four of those NCR's (i.e., 24590-WTP-NCR-CON-02-009, 010, 012, and 014) were related to reinforcing steel bars that did not meet the required ASTM A706-2001 physical properties specifications. Additional testing of the reinforcing steel bars, performed on March 8, 2002, determined that the reinforcing steel bars met the material specification requirements. The responsible FE accepted the satisfactory results of the tests on each of the four NCR's on March 11, 2002. QC verified the results of the tests and closed the NCR's. The inspectors reviewed documented objective evidence and confirmed that re-

examination of nonconforming conditions had been performed and verified, and NCR's were closed.

The inspectors interviewed the FQCM to determine how "rework" and "repair" items were tracked. The inspectors were told that the FE's controlled work activities associated with "rework" or "repair" NCR's, through the use of QC verification of completed disposition in the work packages. In addition, the FQCM told the inspectors an NCR "aging" report was used to track open NCR's. The inspectors interviewed the FE responsible for re-examination of NCR 24590-WTP-NCR-CON-02-002 related to nonconforming backfill material used in soil test Pit #31. The FE showed the inspector where the work package contained a backfill inspection report that was to be completed at the time of the re-examination. The backfill inspection report would be used to close the NCR. The inspectors determined that the contractor had a controlled process for re-examination of the nonconforming condition, verification of corrective action, and close out of the NCR. The inspectors reviewed a copy of an aging report and confirmed that open NCR's were listed and tracked on the report.

1.12.3 Conclusions

The inspectors concluded that the Contractor had written and approved implementing procedures for re-examination of repaired or reworked nonconforming items and quality trending of nonconforming items, which met the *QA Manual*, Policy Q-15.1, "Control of Nonconforming Items," Section 3.9 and 3.10, requirements. In addition, the inspectors concluded that the Contractor complied with these procedures for the small number of NCR's that had been initiated.

1.13 Surveillances (ITP I-133)

1.13.1 Inspection Scope

The inspectors reviewed the Contractor's implementing procedure for conducting QA and QC surveillances, interviewed QA and QC staff, and reviewed surveillance records to assess the implementation of the *QA Manual*, Policy Q-18.2, "Quality Assurance Surveillance," requirements.

1.13.2 Observations and Assessments

The inspectors reviewed the Contractor's implementation of procedure 24590-WTP-GPP-QA-601_0, "*Quality Assurance Surveillance*," and determined that the following basic requirements for conduct of surveillances were included in the procedure:

- Verifying the quality of work in progress and compliance with applicable governing documents

- Identifying conditions adverse to quality
- Ensuring prompt corrective action was implemented by management responsible for performing the work.

The inspectors selected and reviewed several QA and QC surveillance reports (see list of surveillances in Section 3.4) and the resulting Corrective Action Reports (listed in Section 3.4) in order to assess the implementation of the QA surveillance procedure. The inspector's determined that deviations from the procedures observed during the surveillances were documented on Corrective Action Reports.

The inspectors evaluated the independence of the QA and QC engineers who performed the selected surveillances from the work being surveilled. The inspectors reviewed organization charts and determined that the engineers who performed the surveillances were not directly responsible for the work that was reviewed during the surveillance. The inspectors interviewed one QA and two QC engineers who performed the selected surveillances to determine if they had sufficient authority and freedom from the line to carry out their responsibilities. The inspectors determined that the surveillance engineers had sufficient authority and freedom to carry out their responsibilities.

The inspectors reviewed resumes of QA and QC engineers who performed the selected surveillances to confirm that the education and experience was consistent with their assigned surveillance areas. The inspectors concluded that surveillances were performed by technically knowledgeable personnel independent of the work being reviewed by the surveillances.

The inspectors confirmed that surveillances were documented in surveillance reports, which were distributed to appropriate management, through the review of surveillance reports and Quality Assurance Department Distribution Forms for Audit, Assessment, Surveillance, Corrective Action, Deficiency Reports, and Root Cause Analyses. The inspectors reviewed a sample of 12 QA surveillance reports and seven QC surveillance reports, and distribution sheets were included documenting distribution to appropriate responsible management.

Based on reviews of the sample of 19 surveillance reports and 6 CARs, the inspectors verified that surveillance records included assessment reports, written responses and the record of completion of corrective action. The inspectors confirmed through direct observation that a sample of surveillance reports and corrective action reports were maintained as quality records within the Project Document Control. The written responses to deviations to procedures and record of completion of corrective action were documented on CARs.

The inspectors verified surveillances were conducted to evaluate the quality of selected work subject to *QA Manual*, Policy 18.2, Quality Assurance Surveillance, through review of the sample of surveillance reports. The surveillance engineers documented the requirement being verified on each surveillance report.

1.13.3 Conclusions

The inspectors concluded the Contractor had written, approved, and implemented the procedure for conducting QA and QC surveillances, "*Quality Assurance Surveillance*." The procedure met the requirements of *QA Manual*, Policy 18.2, "Quality Assurance Surveillance."

1.14 Control of Special Processes (ITP I-132)

1.14.1 Inspection Scope

The inspectors reviewed the Contractor's implementing procedures and interviewed engineering management for the control of special processes to assess the implementation of the *QA Manual*, Policy Q-09.1, "Control of Special Processes," requirements.

1.14.2 Observations and Assessments

The inspectors reviewed construction procedure 24590-WTP-GPP-CON-3701, *Development and Administration of Welding Program*, and 24590-WTP-MN-CON-01-001-09, *Welding Control Manual (WCM)* to verify the implementation of the *QA Manual*, Policy Q-09.1, "Control of Special Processes," Section 3.0. The *Development and Administration of Welding Program* procedure identified the *WCM* as the source of qualified welding procedure specifications, welding related standards, installation welding post heat treatment, and nondestructive examination standards for the Waste Treatment Plant (WTP) construction. The above *WCM* applied only to Limited Construction Activities Request (LCAR) work, which had no important-to-safety (ITS) work within its scope at the time of the inspection.

The inspectors interviewed the Assistant Field Engineering Manager and the Lead Field Welding Engineer and confirmed that the *WCM* is limited to non-ITS work and that ITS-related special processes have not been performed.

1.14.3 Conclusions

The inspectors concluded that the Contractor had developed the program and procedures, which implement the *QA Manual*, Policy Q-09.1, "Control of Special Processes," Section 3.0. However, the inspectors were not able to verify implementation of the procedures in that no ITS special process work had been performed at the time of inspection.

1.15 Control of Measuring and Test Equipment (ITP I-132)

1.15.1 Inspection Scope

The inspectors reviewed the Contractor's procedure for the control of measuring and test equipment to assess the adequacy of implementation of *QA Manual*, Policy Q-12.1, "Control of Measuring and Test Equipment," requirements. The inspectors also interviewed Contractor's staff and reviewed objective evidence of implementation of the procedure.

1.15.2 Observations and Assessments

The inspectors reviewed construction procedure 24590-WTP-GPP-CON-7102, "*Control of Measuring and Test Equipment*," to assess the adequacy and implementation of *QA Manual*, Policy Q-12.1, "Control of Measuring and Test Equipment," Section 3.0, which provided the requirements and responsibilities for controlling measuring and test equipment (M&TE). The inspectors verified that the procedure *Control of Measuring and Test Equipment* complied with the requirements of the of *QA Manual*, Policy Q-12.1, "Control of Measuring and Test Equipment," Section 3.0.

The inspectors verified that a list of M&TE subject to control by the Contractor was identified on an M&TE List, as required by the procedure. The inspectors verified the M&TE List included equipment used for testing and inspection activities. The M&TE List data was originated when an M&TE Calibration Interval Approval (CIA) form was initiated and approved during the procurement of each unit of M&TE. The purpose of the CIA form was to ensure that selected M&TE were of a proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to requirements. The CIA form was also used to define the interval of calibration and identify the calibration agency. Upon receipt of each unit of M&TE, the unit's serial number was added to the database and that unit was automatically added to the M&TE List.

The inspectors verified that the units of M&TE were uniquely identified, labeled with calibration due date, and stored in the field in a lockable office by looking at 4 of 32 of the units of M&TE stored at the site. The inspectors verified that an M&TE Checkout and Usage Log required by the procedure, was utilized in the field by interviewing a Field Engineer and reviewing a copy of the log. The inspectors verified that the M&TE was calibrated against reference calibration standards traceable to nationally recognized standards by reviewing the Original Calibration Certifications for 6 of 32 of the items on the M&TE List. The inspectors verified that the calibrated standards had a greater accuracy than the required accuracy of the M&TE being calibrated. The verification was performed by review of the checklist for an off-site-calibration supplier's pre-award survey. This checklist addressed the requirement for calibration service suppliers and was used to place calibration services supplier Belhaven Applied Technology on the Approved Suppliers List. The inspectors verified that the procedure required the performance of calibration checks both before and after use for M&TE used in one-time only applications. At the time of the inspection, there were no units of M&TE that were intended for a one-time only application.

Based on the procedure *Control of Measuring and Test Equipment*, Section 4.0, the inspectors assessed the adequacy of the submittal of required records to Project Document Control (PDC) by providing a list of M&TE records categories to the PDC Manager for recovery. PDC was only able to retrieve copies of the M&TE Calibration Interval Approval Forms. The procedure *Control of Measuring and Test Equipment*, Section 4.0 "Records" required Original Calibration Certificates to be submitted to PDC in a timely manner for each of the equipment on the M&TE List. Based on a sample of 6 of 32 units of equipment on the M&TE List, not all records were located in PDC. Some documents (some stamped as "original") were found in the file cabinet of a field engineer. These certificates had been in the possession of the Contractor for at least three months. Based on the above, the inspectors concluded that the Contractor failed to provide documents to PDC in a timely manner, which is documented as a failure to follow the approved implementing procedure *Control of Measuring and Test Equipment* and is considered a Finding (IR-02-003-02-FIN).

A review of the M&TE List determined that none of the M&TE equipment was due for its initial recalibration at the time of the inspection. Based on this, the inspectors were unable to assess if the Contractor had implemented the processes for 1) handling and evaluating out-of-calibration M&TE, 2) evaluating suspect measurements, and/or 3) evaluating damaged, stolen or lost M&TE. Therefore, there have been no instances of M&TE that were past due recalibration. However, one piece of M&TE (a torque wrench) was removed from service when the torque value etchings became too difficult to read. An evaluation of the impact of prior use of this torque wrench was being performed at the time of the inspection. The last fifteen readings used by this wrench were rechecked with no negative results. An M&TE Evaluation Report was being prepared and reviewed by the Contractor. No units of M&TE have been damaged, stolen, or lost at the time of this inspection. Based on this, the inspectors concluded the Contractor was following the implementing procedure for calibration of M&TE equipment.

1.15.3 Conclusions

The inspectors concluded that the requirements of the *QA Manual*, Policy 12.1, "Control of Measuring and Test Equipment," was incorporated in the Contractor's implementing procedure *Control of Measuring and Test Equipment*. The Contractor implemented the procedure with the exception of the Contractor's failure to follow a records management requirement as described in Finding IR-02-003-02-FIN.

2.0 EXIT MEETING SUMMARY

The inspectors presented preliminary inspection results to members of the Contractor's management at an exit meeting held on March 14, 2002. The Contractor acknowledged the Finding, observations, and conclusions presented.

The inspectors asked the Contractor whether any materials examined during the inspection should be considered as limited rights data. No limited rights data were identified.

3.0 REPORT BACKGROUND INFORMATION

3.1 Partial List of Persons Interviewed

Simon Wright, Assistant Field Engineering Manager
Alan Johnson, Lead Field Welding Engineer
Roy Janysek, Assistant Lead Field Welding Engineer
James L. Smith, Supplier QA Supervisor
Steve Sallee, Supplier QA Engineer
Ron Mejiano, Senior Piping Field Engineer
Paul Opet, Senior Piping Field Engineer
George Hagen, PDC Manager
George Shell, Quality Assurance Manager
Bill Klinger, Supplier QA Manager
Mike Ensminger, Quality Control Manager
Raleigh Amos, Project Field Engineer Manager
Frank Boozer, Lead QC Civil Inspector
Gilbert Hoffman, Lead QC Receiving Inspector
Doug Neal, QC Surveillance Engineer
Dennis Henry, QA Surveillance Engineer
Marty Ehlinger, QA Surveillance Engineer
Dom Canazara, QA Programs Manager
Jim Rutherford, QA Surveillance Manager
Cliff Edwards, QC Engineer
Karen Vacca, Training Manager
Bill Yeo, HR Program Manager
Charlie Herbert, Construction Training Manager
Alan Nagel, NDE Specialist

3.2 Inspection Procedures Used

Inspection Technical Procedure 1-132, Rev. 1, "Identification and Control of Items and Processes"

Inspection Technical Procedure 1-133, Rev. 1, "Quality Control Program Inspection"

3.3 List of Items Opened, Closed and Discussed

Opened

IR-02-003-01-IF	Inspection Follow-up Item	Contractor's procedure for Construction Quality Control Program did not require a labeling of Final Inspected items.
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IR-02-003-02-FIN Finding

Calibration records were not being submitted to PDC and were being temporarily stored incorrectly.

Closed

None

Discussed

None

3.4 List of Documents Reviewed

QA Manual Policies

24590-WTP-QAM-01-001, *Quality Assurance Manual*, Rev. 0, dated August 2001

Contractor Procedures Reviewed

24590-WTP-GPP-CON-7104A_0, "Nonconformance Reporting and Control," dated October 1, 2001

24590-WTP-3DP-G04B-00061_0, "Disposition of Nonconformance Reports," dated September 28, 2001

24590-WTP-GPP-CON-7101_0, "Construction Quality Control Program," dated October 1, 2001

24590-WTP-GPP-CON-7106_0, "Quality Control Personnel Certification," dated September 14, 2001

24590-WTP-GPP-CON-1301_0, "Construction Training," dated October 1, 2001

24590-WTP-GPP-CTRG-002_1, "Training," dated January 30, 2002

24590-WTP-GPP-CON-3701_0, "Development and Administration of Welding Program," dated December 7, 2001

24590-WTP-MN-CON-01-001_0, "Welding Control Manual," dated December 10, 2001

24590-WTP-GPP-CON-7102_0A, "Control of Measuring and Test Equipment," dated December 18, 2001

24590-WTP-GPP-CON-3203_0, "Concrete Operations (Including Supply)," dated January 3, 2002

24590-WTP-3PI-D000-T0001_0, "Engineering Specification for Concrete Work," dated December 3, 2001

24590-WTP-GPP-CON-3202_0, "Excavation and Backfill," dated February 27, 2002

24590-WTP-3PS-CE01-T0001_2, "Excavation and Backfill," dated February 29, 2002

24590-WTP-GPP-GCB-00100B_0, "Field Materials Management," dated October 1, 2001

24590-WTP-GPP-QA-204A_0, "Quality Trending and Analysis," dated January 14, 2002

24590-WTP-GPP-QA-601_0, "Quality Assurance Surveillance," dated September 28, 2001

Nonconformance Reports

24590-WTP-NCR-CON-01-002, "Potable Piping Material Received Without QA Documentation," Revision 0, prepared December 5, 2001

24590-WTP-NCR-CON-01-003, "Sand Cone Tests of Compaction of General Backfill in Areas 1 and 2 is Below Minimum Compaction Density," Revision 0, prepared December 14, 2001

24590-WTP-NCR-CON-02-001, "Underground Compressed Air Piping was Inspected by a Welding Engineer who was not Certified as a Level II Visual Examiner," Revision 0, prepared January 24, 2002

24590-WTP-NCR-CON-02-002, "Backfill Material Placed in Pit 31 did not meet Specification 24590-BOF-3PS-CE01-T0001," Revision 0, prepared January 29, 2002

24590-WTP-NCR-CON-02-003, "Storm Drain Bedding Material e Test Failed," Revision 0, prepared January 29, 2002

24590-WTP-NCR-CON-02-004, "Concrete for Fire System Thrust Blocks in Location C1 were not tested as required by Specifications 24590-BOF-3PS-C000-T0001 and 24590-3PS-DB01-T0001, Revision 0," prepared January 31, 2002

24590-WTP-NCR-CON-02-005, "Identification Tape for Firewater Lines did not Meet Color and Lettering Requirements of Specification 24590-BOF-3PS-PZ41-T00001," Revision 0, prepared January 31, 2002

24590-WTP-NCR-CON-02-006, "Subcontractor Backfill Testing did not conform with specifications 24590-BOF-3PS-CE01-T0001 and 24590-BOF-3PS-C000-T0001," Revision 0, prepared February 4, 2002

24590-WTP-NCR-CON-02-007, "Concrete Manholes for Plant Service Air System Drip Legs did not Conform with Drawing 24590-BOF-C2-PSA-00001," Revision 0, prepared February 7, 2002

24590-WTP-NCR-CON-02-008, "ASTM A 193 Grade B7 Stud and Hex Head Bolts were received Galvanized contrary to P.O. 24590-CM-FPA-FB00-00001," Revision 0, prepared February 10, 2002

24590-WTP-NCR-CON-02-009, "CMTR for Heat # 220384 Rebar Shows Elongation that did not Meet ASTM A706-2001," Revision 0, prepared February 12, 2002

24590-WTP-NCR-CON-02-010, "CMTR for Heat # 120387 Rebar Shows Tensile Strength that did not Meet ASTM A706-2001," Revision 0, prepared February 12, 2002

24590-WTP-NCR-CON-02-011, "Eight Rebar Bundles were Received with Two Heat Numbers on the Identification Tags," Revision 0, prepared February 12, 2002

24590-WTP-NCR-CON-02-012, "CMTR's for Five Rebar Heat Numbers Showed Tensile Strength that did not Meet ASTM A706-2001," Revision 0, prepared February 20, 2002

24590-WTP-NCR-CON-02-013, "Sanitary Sewer Manholes were not Manufactured in accordance with drawing 24590-BOF-CD-SND-00014," Revision 0, prepared February 20, 2002

24590-WTP-NCR-CON-02-014, "CMTR for Heat # 120383 Rebar Shows Tensile Strength that did not Meet ASTM A706-2001," Revision 0, prepared February 22, 2002

Surveillance Reports:

24590-WTP-SV-QA-01-027, Rev. 0, [no title], dated July 19, 2001

24590-WTP-SV-QA-01-071, Rev. 0, "QC-QAP Analysis Summary," dated September 18, 2001

24590-WTP-SV-QA-01-125, Rev. 0, "Quality Control Certification Review," dated October 16, 2001

24590-WTP-SV-QA-01-158, Rev. 0, "Field Change Request (FCR)," dated November 26, 2001

24590-WTP-SV-QA-01-162, Rev. 0, "Management Assessment Action Item # 948," dated November 29, 2001

24590-WTP-SV-QA-02-005, Rev. 0, "Excavation Permits," dated January 3, 2002

24590-WTP-SV-QA-02-006, Rev. 0, "STARRT/JHA," dated January 3, 2002

24590-WTP-SV-QA-02-027, Rev. 0, "Quality Assurance Surveillance Procedure," dated January 22, 2002

24590-WTP-SV-QA-02-046, Rev. 0, "Site Surveillance Activities 12902," dated January 29, 2002

24590-WTP-SV-QA-02-047, Rev. 0, "Site Surveillance Activities 13002," dated January 30, 2002

24590-WTP-SV-QA-02-048, Rev. 0, "Site Surveillance Activities 13102," dated January 31, 2002

24590-WTP-SV-QA-02-057, Rev. 0, "Site Surveillance of Welding Activities," dated February 7, 2002

24590-WTP-SV-QC-02-003, Rev. 0, "Commercial Rebar Marking Identification, dated January 16, 2002

24590-WTP-SV-QC-02-004, Rev. 0, "ITS Backfill of Pit 31," dated January 21, 2002

24590-WTP-SV-QC-02-005, Rev. 0, "Pit 31 ITS Backfill," dated January 24, 2002

24590-WTP-SV-QC-02-006, Rev. 0, "Field Surveillance of Firewater Line's Activities," dated January 30, 2002

24590-WTP-SV-QC-02-008, Rev. 0, "Work Package Review," dated February 25, 2002

24590-WTP-SV-QC-02-011, Rev. 0, "Fire Water Line Thrust Blocks Retrofits," dated February 28, 2002

24590-WTP-SV-QC-02-013, Rev. 0, "CDF and Thrust Blocks for Firewater Line," dated March 6, 2002

Corrective Action Reports:

24590-WTP-CAR-QA-01-016, Rev. 1, dated December 3, 2001

24590-WTP-CAR-QA-01-017, Rev. 1, dated December 3, 2001

24590-WTP-CAR-QA-02-002, Rev. 1, dated January 3, 2002

24590-WTP-CAR-QA-02-003, Rev. 2, dated January 3, 2002

24590-WTP-CAR-QA-02-026, Rev. 0, January 31, 2002

24590-WTP-CAR-QA-02-036, Rev. 0, February 7, 2002

Other Documents Reviewed

Supplier Corrective Action Report (SCAR) 24590-WTP-SCAR-QA-02-003, "Several Nonconformance Reports were Generated Because Rebar was Shipped to the WTP Site with Test Results that Failed to Meet Requirements of ASTM A706-2001," Revision 0, dated February 22, 2002

GN Northern (the material testing subcontractor) Quality Assurance Plan

M&TE List, dated February 13, 2002

WTP Approved Supplier List, dated March 6, 2002

Check Out & Usage Log, dated March 13, 2002

M&TE Calibration Interval Approval forms for:

- Torque Wrench, TW-001 (Dated 1/16/02)
- Test Pressure Gauge, TG-004 (Dated 1/16/02)
- Holiday Detector, HD-002 (Dated 1/16/02)
- Test Pressure Gauge, TG-003 (Dated 1/16/02)
- Dry Film Thickness Gauge, DFT-003 (Dated 1/16/02)
- Peak Reading Voltmeter, PRM-01 (Dated 1/16/02)

Original Calibration Certificates for:

- Torque Wrench, TW-001 (Certificate provided by Belhaven Applied Technologies, Dated 11/30/01)
- Test Pressure Gauge, TG-004 (Certificate provided by Belhaven Applied Technologies, Dated 12/4/01)
- Holiday Detector, HD-002 (Certificate provided by Tinker & Rasor, Dated 10/31/01)
- Test Pressure Gauge, TG-003 (Certificate provided by Belhaven Applied Technologies, Dated 12/4/01)
- Dry Film Thickness Gauge, DFT-003 (Certificated provided by Southern California Edison Metrology Laboratory, Dated 12/24/01)
- Peak Reading Voltmeter, PRM-01

M&TE Evaluation Report, draft

4.0 LIST OF ACRONYMS

AB	authorization basis
ASTM	American Society for Testing and Materials
BNI	Bechtel National, Inc.
CAQ	Condition Adverse to Quality
CAR	Corrective Action Report
CIA	Calibration Interval Approval

CMTR	Certified Material Test Report
DOE	U.S. Department of Energy
ES&H	Environment, Safety, and Health
FE	Field Engineering
FEM	Field Engineering Manager
FIN	Finding
FQCM	Field Quality Control Manager
HR	Human Resources
IFI	Inspection Follow-up Item
IR	Inspection Report
ITP	Inspection Technical Procedure
ITS	Important to Safety
LAW	Low Activity Waste
LCAR	Limited Construction Activities Request
LQI	List of Qualified Individuals
M&TE	Measuring and Test Equipment
NCR	Nonconformance Report
NDE	Non-destructive Examination
OJT	on the job training
ORP	Office of River Protection
OSR	Office of Safety Regulation
PDC	Project Document Control
QA	Quality Assurance
QAM	Quality Assurance Manual
QC	Quality Control
QCE	Quality Control Engineer
QL	Quality Level
RPP-WTP	River Protection Project Waste Treatment Plant
SCAR	Supplier Corrective Action Report
TM	Training Manager
WCM	Welding Control Manual
WGI	Washington Group International
WTP	Waste Treatment Plant

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